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Main Menu | Search Form | Posting Counts | Show S Numbers | Edit S Numbers | Preferences | Cases

Search Results -

Terms	Documents
L3 and l5	0

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Search: L11

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Recall Text | Clear

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DATE: Monday, August 26, 2002 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
L11	L3 and l5	0	L11
L10	L4 and l3	105	L10
L9	L4 and l5	3	L9
L8	l5 and (human or body) same (part$ or member$)	15	L8
L7	l3 and l4	105	L7
L6	L5 and l4 and l3	0	L6
L5	(provid$3 or furnish$3) same plurality same profil$3 same relat$3 same predetermin$5	60	L5
L4	(affect$3 or pertain$3) same (person$ or individual$)	58800	L4
L3	(computer$6 or network43 or database) same (assess$6 or determin$6) same (medical or hospital$) same (condition or history)	466	L3
L2	(computer$6 or network43 or database) same (assess$6 or determin$6) same (medical or hospital$) same (condition or history) same (affect$3 or pertain$3) same (person$ or individual$)	23	L2
L1	claim same assess$6 same model$	44	L1

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L8: Entry 4 of 15 File: USPT Aug 8, 2000

DOCUMENT-IDENTIFIER: US 6098222 A
TITLE: Vibratory patient support system

Abstract Text (1):
The present invention relates to a vibratory patient support system for providing therapeutic vibrational action or forces to a patient suffering from a respiratory ailment. The vibratory patient support system includes a rigid support frame such as a bed frame, a plurality of inflatable sacs supported upon the support frame with each sac having an upper surface so that the plurality of sacs forms a patient support surface. The inflatable sacs are pressurized and maintained at a predetermined pressure. This predetermined pressure may be a patient height and weight specific pressure profile. A vibrating component is provided separate from the apparatus for pressurizing and maintaining the air sacs at the predetermined pressure. The vibrating component vibrates at least a portion of the patient support surface at a predetermined frequency. In this manner, the plurality of air sacs are maintained at their predetermined pressure and the portion of the patient support surface is simultaneously vibrated at the predetermined frequency. The vibrating means are further variably controllable so that an operator can vary the frequency, magnitude or amplitude, and duration of the vibrating therapy. The vibratory patient support system may include a specialty low air loss bed configuration including vibrating means for vibrating a portion of the patient support surface of the low air loss sacs at the predetermined frequency.

Brief Summary Text (52):
The sacs of the support system are preferably divided into separate body zones corresponding to a different portion of the patient's body requiring a different level of pressure to support same. Each body zone is controlled by two pressure control valves in one operational mode, one for the chambers on one side of the sacs and one for the chambers on the other side of the sacs. In another operational mode, the two pressure control valves are connected so that each pressure control valve controls the pressurization of the chambers in both sides of every alternate sac in the body zone. The microprocessor is preprogrammed to calculate an optimum reference pressure for supporting the patient in each body zone. This reference pressure is determined at the valve passage where the pressure transducer of each pressure control valve is sensing the pressure. This reference pressure is calculated based upon the height and weight of the patient. Once this reference pressure has been calculated for the particular patient and for the particular mode of operation of the patient support system, for example, turning mode at a particular attitude, pulsation mode at a particular level of depressurization, standard operating mode, etc., the microprocessor signals the circuit board which transmits this signal to the circuit card of the pressure control valve. The circuit card of the valve compares the pressure being measured by the transducer in each valve passage with the reference pressure which the microprocessor has calculated for the particular conditions of operation. Depending upon whether the measured pressure is greater than or lower than the calculated reference pressure, the circuit card signals the valve's motor to open or close the valve to increase or decrease the pressure to arrive at the target reference pressure. The circuit card continuously monitors this comparison and controls the valves accordingly.

Brief Summary Text (55):
Each flow diverter valve preferably is mounted within a modular support member and includes a first flow pathway and a second flow pathway. The ends of each flow pathway are configured to connect with the ends of two separate pairs of channels defined in the modular support member. The flow pathways are mounted on a rotating-disk that can be rotated to change the channels to which the ends of the two flow pathways are connected. This changes the flow configuration of the path leading from the blower to the individual sacs and sac chambers. At one position of the rotating disk, all of the

chambers on one side of the sacs of a body zone are connected to the blower via one pressure control valve and all of the other sides of the sacs in the body zone are connected to the blower via a second pressure control valve. In a second position of the rotating disk, every alternate sac in the body zone has its chambers on both sides connected to one pressure control valve, and every other alternate sac in the body zone has both of its chambers connected to the blower via a second pressure control valve. Switching between the two positions of the rotating disk changes the flow configuration from the blower to the individual chambers of the sacs. This enables the present invention to be operated in two distinctly different modes of operation with a minimum number of valves and connecting pathways.

Brief Summary Text (56):
The phrase "pressure profile" is used herein to describe the range of pressures in the sacs of the patient support system at any given support condition. The pressure in the sacs in one body zone of the support system likely will be different from the pressure in the sacs of another body zone because the different weight of different portions of the patient's body imposes a corresponding different support requirement for each particular body zone. If the individual pressures in the sacs of all of the body zones were to be represented on a bar graph as a function of the linear position of the sacs along the length of the patient support, a line connecting the tops of the bars in the graph would depict a certain profile. Hence, the use of the term "pressure profile" to describe the pressure conditions in all of the sacs at a given moment in time, either when the pressures are changing or in a steady state condition.

Detailed Description Text (23):
In keeping with the modular configuration of the patient support system of the present invention, the means for supplying air to each sack further preferably includes a modular manifold for distributing air from the blower to the sacks plugged into the modular sack support member. The modular manifold provides means for mounting at least two pressure control valves and for connecting same to a source of pressurized air and to an electric power source. Because its elongated shape resembles a "log," such modular manifold is sometimes referred to as the log manifold, and one embodiment is designated by the numeral 128 in FIG. 10 for example. Log manifold 128 includes an elongated main body 130 that is hollow and defines a hollow chamber 132 within same. As shown in FIG. 10 for example, main body 130 is shaped as a long rectangular tube which preferably is formed of aluminum or another light weight material such as a hard plastic or resin. As shown in FIG. 10, an air supply hose 134, which suitably is one and one quarter inches in diameter, carries pressurized air from blower 66 to chamber 132 of main body 130. A first end wall 136 is defined at one narrow end of main body 130, and a second end wall (not shown) is defined at the opposite end of main body 130. A conventional pressure check valve 138 such as shown in FIG. 13 for example, is provided in each end wall to permit technicians to gauge the pressure inside chamber 132.

Detailed Description Text (41):
The microprocessor is programmed to set the reference pressure of each pressure control valve of each body zone into which the patient support system has been divided for purposes of controlling the pressure supplied to air sacks 34 under particular portions of the patient. Based upon the height and weight of the patient, the microprocessor is preprogrammed to calculate an optimum reference pressure for supporting the patient in each body zone. This reference pressure is determined at the valve passage where the pressure transducer of each pressure control valve is sensing the pressure. The circuit card 192 performs a comparison function in which it compares the reference pressure signal transmitted to it from microprocessor 160 via circuit board 150 to the pressure which it has received from the pressure transducer. Depending upon the difference between this signal received from the valve's pressure transducer and the calculated desired signal corresponding to the preset reference pressure, the valve circuit 192 signals the valve motor to open or close the pressure control valve, depending upon whether the pressure is to be increased or decreased. This process continues until the desired reference pressure is sensed by the pressure transducer of the pressure control valve. The microprocessor has parallel processing capability and thus can simultaneously supply each of the pressure control valves with the reference pressure for that particular control valve. Moreover, the speed of each of the microprocessor and valve circuits greatly exceeds the time in which the motors of the pressure control valves can respond to the signals received from the valve circuits. Thus, in practical effect the motor response times limit the frequency with which the pressure control valves can be corrected.

Detailed Description Text (43):

Yet another factor that can affect the reference pressure calculated by the microprocessor is whether the patient comfort adjustment buttons 216 have been manipulated via the control panel to adjust the pressure desired by the patient in a particular zone to a pressure slightly above or slightly below the reference pressure that the microprocessor is preprogrammed to set for that particular zone under the other conditions noted, including, elevation angle, side lying or back lying, and tilt attitude. As shown in FIG. 16 for example, each body support zone has a triangular button 216 pointing upward and a triangular button 216 pointing downward. Depression of the upward button 216 increases the reference pressure that the microprocessor calculates for that particular zone. Similarly, the depression of the downward pointing button 216, decreases the reference pressure that the microprocessor calculates for that particular zone. The range of increase and decrease preferably is about twenty percent of the reference pressure that is calculated for the standard mode of operation in each particular zone. This permits the patient to change the pressure noticeably, yet not so much as to endanger the patient by producing a condition that is either over-inflated or under-inflated for the sacks in a particular zone. Moreover, the 20% limitation also can be overridden by pressing the OVERRIDE button shown in FIG. 16. The override function can be cancelled by pressing the RESET button shown in FIG. 16.

Detailed Description Text (60):
The operator initiates the rotation by pressing the RUN button on panel 210 in FIG. 16 for example. When the operator presses the RUN button, the microprocessor adjusts the pressure control valves 162 to set the new tilt reference pressure in the end and intermediate chambers on the side of the support system to be tilted. This results in a reduction in the pressure in the end and intermediate chambers of the tilted sides of the sacks in each body zone. The microprocessor operates the control valve to prevent this low sack pressure from falling below 1 to 2 inches of standard water, because this is the minimum pressure needed to keep the end chamber inflated while the weight of the patient is squeezing out air from the intermediate chamber. The microprocessor also raises the pressure in the end and intermediate chambers on the opposite side, i.e., non-tilted side of the sacks of the support system. The increase in pressure in the chambers of the untilted side of the support system is needed to compensate for the loss in pressure in the chambers on the tilted side of the support system. The additional pressure allows the patient to be supported in the tilted position as comfortably as in the non-tilted position. The pressure increase in the chambers of the non-tilted side of the sacks is preferably sufficient so that the average pressure between the two sides of each sack equals the pressure in this sack when the patient is supported thereon in a non-tilted position. In other words, one-half of the sum of the pressure in the high side of the sack and the low side of the sack is equal to the normal base line pressure of this particular sack in a non-tilted mode of operation, i.e., when both sides of the sack are at this same base line pressure.

Detailed Description Text (63):
support to that portion of the patient's body supported by the sacks in that body zone. The level of support is predetermined depending upon the height and weight of the patient and calculated accordingly by the microprocessor. The height and weight data also affect the respective first air pressure that is chosen for the sacks in that particular body zone.

Detailed Description Text (64):
The terms "pressure profile" are used to refer to the fact that the pressure in each body zone may be different because of the different support requirement of that particular body zone. If the individual pressures in the sacks of all the body zones were to be represented on a bar graph as a function of the linear position of the sacks along the length of the patient support, a line connecting the tops of the bars in the graph would depict a certain profile. Hence the use of the term "pressure profile" to describe the pressure conditions in all of the sacks at a given moment in time, either when the pressures are changing or in a steady state condition.

Detailed Description Text (65):
The next step in turning the patient involves separately controlling the air pressure that is supplied to each side of each of the sacks. This preferably is accomplished by supplying the chambers on one side of the sacks in each body zone via a first pressure control valve and supplying the chambers on the other side of the sacks via a separate pressure control valve, and connecting each pressure control valve to a four-way diverter valve. The diverter valve can then be configured to ensure that the air pressure being supplied to the chambers on one side of each sack is being controlled by one of the pressure control valves, and the pressure being supplied to the chambers on the other side of the sack of a particular zone is being supplied through a separate

pressure control valve.

Detailed Description Text (67):
Another step in the method of turning the patient requires raising the pressure in the chamber on the side of the sacks that is opposite the side to which the patient is being tilted. This involves raising the pressure in the chamber of the non-tilted side of each of the sacks to a predetermined third pressure profile. The raised pressure profile in the non-tilted sacks compensates for the lower pressure profile in the side of the sacks to which the patient has been tilted. When the overall pressure being supplied to support the patient has been reduced in half of the sack, as occurs during tilting, that portion of the patient's body in that particular body zone would not be maintained at the desired level of support without increasing the pressure in the non-tilted side of the sack.

Detailed Description Text (75):
The steps of the method for pulsating the pressure in the sacks of the low air loss patient support system include configuring the air supply means of the patient support to define two separate groups of alternating sacks. A first group of sacks includes either every odd number sequenced sack in order from one end of the patient support to the opposite end of the patient support or every even number sequenced sack. For purposes of this description, the first of the two groups of sacks will be chosen to be the odd number sequenced sacks. In a preferred embodiment, the sacks are further grouped into body zones to support the patient's body at a predetermined pressure for all of the sacks in the body zone. Thus, all of the sacks in a particular body zone will be pressurized at the same first pressure, and accordingly the individual first pressure will be applied to all of the sacks in each body zone. This step of configuring the sacks is preferably accomplished by configuring a plurality of diverter valves to connect every alternating sack in a body zone.

CLAIMS:

2. The bed of claim 1, wherein at least a portion of the air sacs form a plurality of body support zones at least partially disposed beneath the patient, and the control assembly further constructed to generally maintain the body support zones at a predetermined pressure profile.

6. A patient support system, comprising:

a plurality of body support zones at least partially disposed beneath a patient, said body support zones comprising a combination of a plurality of adjacent air bags disposed along the length of a bed;

an air supply and regulation assembly configured to generally maintain said body support zones at a predetermined pressure profile;

at least one generally independently inflatable cell at least partially disposed beneath said patient,

an air chamber and valve assembly operably controllable to alternately pressurize and vent said independently inflatable cell at a desired frequency; and,

a microprocessor assembly including an operator interface configured to facilitate selection of said desired frequency of pressurization and venting of said independently inflatable cell.

19. A bed for supporting a patient, comprising:

a bed frame;

a supply of pressurized air;

an inflatable patient support assembly carried by the bed frame, the assembly having;

a plurality of generally adjacent, inflatable transverse air sacs, at least a portion of the air sacs forming a plurality of body support zones at least partially disposed beneath the patient and providing direct support for the patient;

at least one inflatable impact cell positioned adjacent at least one of the transverse air sacs, the impact cell generally aligned with a portion of the patient's upper body;

and

a control assembly constructed to selectively supply air from the air supply to the impact cell independently of inflation of the transverse air sacs, and to repeatedly cycle the impact cell between a first and second pressure state at a preselected frequency within a range of about 1 hertz to about 25.

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Help | Logout | Interrupt

Main Menu | Search Form | Posting Counts | Show S Numbers | Edit S Numbers | Preferences | Cases

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Terms	Documents
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DATE: Monday, August 26, 2002 Printable Copy Create Case

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L12	L7 and identify$3	86	L12
L11	L3 and l5	0	L11
L10	L4 and l3	105	L10
L9	L4 and l5	3	L9
L8	l5 and (human or body) same (part$ or member$)	15	L8
L7	l3 and l4	105	L7
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L1	claim same assess$6 same model$	44	L1

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Search Results - Record(s) 1 through 10 of 10 returned.

☐ 1. Document ID: US 20020116266 A1

L13: Entry 1 of 10 File: PGPB Aug 22, 2002

PGPUB-DOCUMENT-NUMBER: 20020116266
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020116266 A1

TITLE: Method and system for tracking and providing incentives for time and attention of persons and for timing of performance of tasks

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 2. Document ID: US 20020091991 A1

L13: Entry 2 of 10 File: PGPB Jul 11, 2002

PGPUB-DOCUMENT-NUMBER: 20020091991
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020091991 A1

TITLE: Unified real-time microprocessor computer

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☑ 3. Document ID: US 6418424 B1

L13: Entry 3 of 10 File: USPT Jul 9, 2002

US-PAT-NO: 6418424
DOCUMENT-IDENTIFIER: US 6418424 B1

TITLE: Ergonomic man-machine interface incorporating adaptive pattern recognition based control system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 4. Document ID: US 6400996 B1

L13: Entry 4 of 10 File: USPT Jun 4, 2002

US-PAT-NO: 6400996
DOCUMENT-IDENTIFIER: US 6400996 B1

TITLE: Adaptive pattern recognition based control system and method

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 5. Document ID: US 5920477 A

L13: Entry 5 of 10 File: USPT Jul 6, 1999

US-PAT-NO: 5920477
DOCUMENT-IDENTIFIER: US 5920477 A

TITLE: Human factored interface incorporating adaptive pattern recognition based controller apparatus

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 6. Document ID: US 5903454 A

L13: Entry 6 of 10 File: USPT May 11, 1999

US-PAT-NO: 5903454
DOCUMENT-IDENTIFIER: US 5903454 A

TITLE: Human-factored interface corporating adaptive pattern recognition based controller apparatus

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 7. Document ID: US 5901246 A

L13: Entry 7 of 10 File: USPT May 4, 1999

US-PAT-NO: 5901246
DOCUMENT-IDENTIFIER: US 5901246 A

TITLE: Ergonomic man-machine interface incorporating adaptive pattern recognition based control system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 8. Document ID: US 5875108 A

L13: Entry 8 of 10 File: USPT Feb 23, 1999

US-PAT-NO: 5875108
DOCUMENT-IDENTIFIER: US 5875108 A

TITLE: Ergonomic man-machine interface incorporating adaptive pattern recognition based control system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 9. Document ID: US 5867386 A

L13: Entry 9 of 10 File: USPT Feb 2, 1999

US-PAT-NO: 5867386
DOCUMENT-IDENTIFIER: US 5867386 A

TITLE: Morphological pattern recognition based controller system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 10. Document ID: US 5774357 A

L13: Entry 10 of 10 File: USPT Jun 30, 1998

US-PAT-NO: 5774357
DOCUMENT-IDENTIFIER: US 5774357 A

TITLE: Human factored interface incorporating adaptive pattern recognition based controller apparatus

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

Generate Collection | Print

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Previous Page Next Page

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Main Menu | Search Form | Posting Counts | Show S Numbers | Edit S Numbers | Preferences | Cases

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